Yale Forestry School, had formerly practical experience in the lumber camps of the United States and Philippines; and in consequence has been able to give a readable account of the numerous logging methods which are actually in operation. The book should prove suggestive to owners of timber lands in our own Colonies and to Indian foresters.

The first part is general, and comprises chapters on the resources and protection of the forests of the United States. The original woodland area is estimated at 850,000,000 acres, containing about 433,000,000,000 cubic feet of timber. The existing forest has shrunk to 550,000,000 acres, estimated to contain 210,000,000,000 cubic feet, of which the Federal and State Governments control about one-fourth. The second part deals with felling of timber, and contains chapters on labour, tools, organisation of the camp, careful utilisation of the tree, etc. The third part is devoted to transport by land, and is very complete, giving an account of aerial cables, railways, timber slides, and shutes, etc. The rude but efficacious system, by which railroads are often built in the forests of the Far West, is carefully described. The fourth part, transport by water, treats of floating, rafting, flumes, sluices, etc. Another part entitled "Minor Industries," deals with tapping for turpentine, harvesting of tanbarks, etc. A glossary of terms used in logging, tables of wages, timber values, etc., complete this admirable text-book.

Foods and Household Management. A Textbook of the Household Arts. By Prof. Helen Kinne and Anna M. Cooley. Pp. xv+401. (New York: The Macmillan Company, 1914.) Price 5*s*. net.

A FULL treatment is provided in this volume of the production, cost, nutritive value, preparation, and serving of a great variety of foods. The relation of these topics to general household management is made clear, and a careful study of household accounts, methods of buying, and ordinary housewifery is included. Though some parts of the book deal particularly with American conditions, most of the chapters make a direct appeal to teachers of domestic subjects in this country, and the volume deserves their attention.

The Continents and their People. South America. By J. F. Chamberlain and A. H. Chamberlain. Pp. ix+189. (New York: The Macmillan Company, 1913.) Price 3*s*.

THIS beautifully illustrated reading book will serve admirably to supplement the ordinary text-book in use by children studying the geography of South America. The physical and human aspects of geography are presented in such a way as to interest young pupils and to encourage them to trace the connection between the two. There are only three maps in the book; one is an old-fashioned coloured plate, another a photo-relief map of the continent, and the third a sketch map showing rainfall.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. *No notice is taken of anonymous communications.]*

The Movements of Floating Particles.

IN reply to Mr. Archdall Reid (March 19, p. 60) I should say that the effects which he describes are the natural behaviour of a contaminated surface. A greasy contamination of the right order of magnitude tends to spread itself uniformly over the surface. If when the liquid in the saucer sways over to one side, the surface layer went with it, the contamination would be concentrated upon that side and diluted upon the other. Such a displacement is resisted. The invisible surface contamination remains nearly equally distributed, and the fact is witnessed by the visible particles floating upon it.

R.

Weather Forecasts.

IN NATURE of February 26 Mr. Mallock verifies the forecasts for London during 1913. He selects four characteristic types accompanying shifts of wind, and finds that the verification did not exceed 58 per cent. The temperature forecasts were even less accurate, being correct only 161 times; and while the given percentage is 52, a truer value, including doubtful and "no" forecasts, would be 44. He then, very properly, raises the question, reduced to its simplest terms, "Is the daily chart with its many entries worth while?" Personally Mr. Mallock thinks it extremely improbable that trustworthy forecasts can be made. Many meteorologists share this opinion. Two deductions can be drawn, either the chart does not contain data suitable for trustworthy forecasting, or the men who forecast are not competent. The latter we can quickly dispose of, for there is no difference of opinion regarding the honesty and professional skill of the staff of the Meteorological Office; and incidentally we may acknowledge the steady rise of the office under Dr. Shaw's progressive leadership to a commanding place among the meteorological services of the world.

Then is the weather chart inadequate? Yes. Moreever, it will be so for years to come. On the other hand, too much may be expected, and a method of verification applied that is entirely too rigorous. Weather is not the only subject on which forecasts are made, and if these were rigorously tested there would be many verifications below 50 per cent. Not long ago, the writer had gently to remind the editor of a metropolitan daily "that the forecaster in his statements concerning things that had not yet happened was more accurate than the Press (in general) in its statements concerning things that had already happened." Errors in law, medicine, and engineering are neither unknown nor infrequent.

To ask for a definite statement of weather conditions twenty-four hours in advance, is asking much in view of the number of indeterminate variables that are operative. Pressure, temperature, air motion, and precipitation are not definite, regular processes, but often erratic and complicated. From our knowledge of the laws of gases we may indeed work out certain functional relationships, but we are still far from determining actual interferences due to circulation, absorption, and radiation.

Shall the chart then be abandoned, and shall we

© 1914 Nature Publishing Group

cease troubling ourselves with millions of useless observations to be added to millions already existing? No. It is an honest effort, and granting that there is surplusage of certain data, the chart is still worth while. Besides, there are some by-products of great value. To illustrate, a strict verification of the wind shifts at San Francisco, a city where the lower air circulation is marked, might show a high percentage; but this would not be a fair test of the worth of the weather chart. Rather, some by-product, as that of frost protection. In the first week of January, 1913, the general forecaster warned the orange-growers 480 miles away of impending trouble. Each community was warned not once, but day after day, and night after night. Fruit worth 10,000,000*l.* was in jeopardy. Half was saved because of ample, accurate warnings coupled with improved methods of heating, covering, and protecting. Overtopping the vast saving, was the demonstration that protection was effective. The story of the campaign against frost extending over a period of sixteen years and culminating in the struggle of January, 1913, is one of the most inspiring chapters in the history of horticulture. The forecaster not only gave warning, but developed the principles of protection. At least five basic patents for covering, heating, and mixing the air were obtained and donated to the public.

Again, a certain railroad system of the west coast in competition with all steam railroads of the United States was awarded the Harriman Memorial safety medal. In five years not a single passenger's life has been lost through collision or derailment of trains in a total equivalent movement of 8,000,000,000 passengers one mile. What has this to do with the weather chart? Only this, that during those five years at times of greatest strain, during heavy rains when road-beds wash out, and derailments most easily occur, the actual head of the whole system kept in closest touch with the weather office. Time and time again the patrols on thousands of miles of roads were doubled on the judgment of the forecaster, based on the chart.

Yet, in San Francisco, it has been known to turn out fair when rain was indicated, or some sudden drizzle from the sea mar a forecast of fair weather.

And the conjecture of De Morgan which Mr. Mallock quotes, "that Sir George Airy would not have given 2½*d.* for the chance of a meteorological theory formed by masses of observations," remains a conjecture.

Alexander McAdie.

Blue Hill Observatory, March 11.

Origin of Structures on the Moon's Surface.

The difficulty raised by the Rev. O. Fisher (Nature, February 26, p. 714) with regard to the origin of the moon by fission from the earth has been answered already in part in Sir George Darwin's own writings. The length of the day when earth and moon revolved once a day was calculated by him at first as about 5 hours, the figure used by Mr. Fisher. Afterwards, Darwin showed that taking solar tidal friction into account, this period should be reduced to something of the order of 2½ hours, when the two bodies would be almost in contact (see Darwin, "Scientific Papers," vol. ii., pp. 323, 364). It may not be amiss to quote here his cautious estimate of this result:—"The whole subject is full of difficulties, and the conclusions must necessarily remain very speculative."

F. J. M. Stratton.

Gonville and Caius College, Cambridge.
March 6, 1914.

The Isothermal Layer of the Atmosphere.

It is a commonplace observation that "truths of science, waiting to be caught," are often simultaneously and independently "caught" by two or more investigators. One of the most remarkable coincidences of this kind appears never to have been definitely pointed out as such. This is the recent Gold-Humphreys (or Humphreys-Gold) explanation as to why the stratosphere is vertically isothermal; viz., because of equality in that region between emitted and absorbed radiation. This discovery is probably destined to remain conspicuous in the annals of meteorology for two reasons; first, because of its intrinsic importance, and, secondly, because of the following remarkable chronological parallelism in its independent development by two investigators:—

Gold.	*Humphreys.*
Preliminary account read at the Dublin meeting of the British Association for the Advancement of Science, September 2–9, 1908.	Preliminary account read at the Hanover meeting of the American Association for the Advancement of Science, June 29–July 3, 1908.
Preliminary account reported in Nature, October 1, 1908.	Preliminary account reported in *Science*, August 21, 1908.
Final paper received by the Royal Society of London, October 5, 1908.	Final paper sent to the *Astrophysical Journal*, October ?, 1908.
Final paper read before the Royal Society of London, December 10, 1908.	Final paper read before the Philosophical Society of Washington, D.C., October 10, 1908.
Final paper published in the Proceedings of the Royal Society of London, A 82, February 16, 1909.	Final paper published in the *Astrophysical Journal*, vol. xxxix., January, 1909.

It would be difficult to find a more interesting chronological parallel. It is particularly pleasant to add that the principals, who up to the time of the publication of their papers were strangers to each other, have since then become well acquainted and the best of personal friends.

C. Fitzhugh Talman.

U.S. Weather Bureau, Washington, March 7.

Unidirectional Currents within a Carbon Filament Lamp.

During the past two months I have shown to some scores of people the effects described by Dr. Eve under the above heading, in Nature of March 12. His explanation of the slow creep of the displaced filaments back to their original positions does not seem to me wholly satisfactory. Other factors governing the phenomenon are the electromagnetic attractions between the current bearing loops and the plastic yielding of the heated filament. It was a search for the latter effect which first directed my attention to the other phenomena.

The negative discharge from a Wimshurst machine also alters the luminosity of the filament, and I have observed in some cases (using a modified Fleming valve), the complete stoppage of the thermionic current. These two latter effects are now being systematically investigated.

F. Lloyd Hopwood.

Physics Department, St. Bartholomew's Hospital
Medical College, E.C., March 17.

© 1914 Nature Publishing Group